Meeting: 1003, Atlanta, Georgia, MAA CP Q1, MAA Session on Using Handheld Technology to Facilitate Student-Centered Teaching/Learning Activities at the Developmental Algebra Level

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Making Sense of Functions Using Graphing Calculators and Calculator Based Rangers.

Graphing calculators and calculator based rangers (CBR's) are used by developmental mathematics students to develop intuition about function behavior through creating and exploring concrete examples of function concepts. Working in groups, making and testing conjectures, discussing their reasoning with fellow students, and explaining their reasoning in writing, students learn how different representations of functions are related.

Students walk in front of the CBR to create a straight line time-distance graph, trace to determine the change in distance over several one-second intervals, and discover that a constant rate of change causes a function to be linear. They then use regression to fit a linear model to the motion data and discover how the model relates to the motion. They explore nonlinear functions by determining how to create a graph that is increasing and concave up, and a graph that is decreasing and concave down. Given descriptions of motion, they sketch the graphs these motions would create. Given target graphs, they predict the motion necessary to create the graphs.

These activities present function concepts in a real world context, allow students to be active participants, and encourage flexibility and reversibility in mathematical thinking. (Received October 01, 2004)